DOCUMENT RESUME

ED 204 285 SP 018 146

AUTHOR	Horton, Lowell
TITLE	Mastery Learning. Fastback 154.
INSTITUTION	Phi Delta Kappa Educational Foundation, Bloomington, Ind.
SPONS AGENCY	Phi Delta Kappa, Ft. Collins, Colo.
REPORT NO	ISBN-0-87367-154-6
PUB DATE	81
NOTE	35p.
AVAILABLE FROM	Phi Delta Kappa, Eighth and Union, Box 789, Bloomington, IN 47402 ($.75 ea.: discounts for orders over 10 copies).
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	*Ability Grouping; *Academic Achievement; *Educational Strategies; Elementary Secondary Education; Equal Education; *Instructional Design; *Learning Theories; *Mastery Learning; Minimum Competencies

ABSTRACT

Mastery learning is an optimistic theory of human learning that proposes that all learners can achieve mastery of the school's curricular content. Since it demands long range planning and precise designing of learning programs, this method cannot be employed without a great deal of thought and preparation. The forerunners of mastery learning go back as far as the seventeenth century, but the modern concept originated with a model developed by John B. Carroll in 1963. According to Carroll's theory, if students are normally distributed according to aptitude, and, if all are given the same instruction, achievement will be normally distributed. The method assumes that all children can learn equally or nearly equally most school tasks. The mastery learning model consists of six components: (1) identification of specific objectives for each learning task; (2) preassessment of the learner; (3) instruction; (4) diagnostic assessment; (5) prescription; and (6) postassessment. Areas of this approach which should be further examined include: the need for highly specified instructional goals, the philosophical disagreement over the concept of equal education, and limited teacher skills for using mastery learning. However, mastery learning is an innovative method and a powerful concept which deserves careful consideration. (FG)

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Mastery Learning

Lowell Horton

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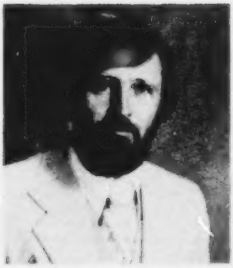

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Series Editor, Derek L. Burleson

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Mastery Learning

By Lowell Horton

Library of Congress Catalog Card Number: 81-80012
ISBN 0-87367-154-6
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This fastback is sponsored by the Colorado State University Chapter of Phi Delta Kappa through a generous contribution from W. J. Peniston, a member of the chapter.

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Introduction

Imagine an educational plan that promises that 95% of the children in school can learn nearly everything the school has to teach. Imagine an instructional design that assures that 80% of students can achieve scores as high as the top 20% now achieve. Proponents of mastery learning claim, and research supports their claims, that an added investment of 10% to 20% over present instructional efforts can result in nearly universal mastery of the school curriculum when, prior to instruction, the cognitive entry level of the learner is assessed; the learner's affective level is considered in the instructional plans; adequate time is provided for the learner to achieve mastery; help is given in trouble spots; and the learning task is approached sensitively and systematically by the teacher.

Mastery learning is an optimistic theory of school learning based on the notion of managing *learning* rather than managing *learners*. The theory suggests that schools can provide not only equality of educational opportunity but also equality of educational outcome. In addition, mastery learning addresses present concerns about basic education as well as current pressures for accountability and minimum competency testing. Advocates further suggest that compensatory learning programs for children from disadvantaged backgrounds may successfully incorporate the principles of mastery learning as one answer to the present public disenchantment with these programs.

There is ample evidence that mastery learning works and has the potential for making a difference in schools. In this fastback I shall

define the concept of mastery learning, examine some of the underlying assumptions, present some of the theory and research on which the idea is based, look at the components of the system, discuss implications for classroom practice, and finally point out some of the potential problems where caution is recommended.

Mastery learning will not be the answer for every educator, but we may very well find that it provides some exciting and provocative assertions that should cause us to question critically the way we presently view teaching and learning.

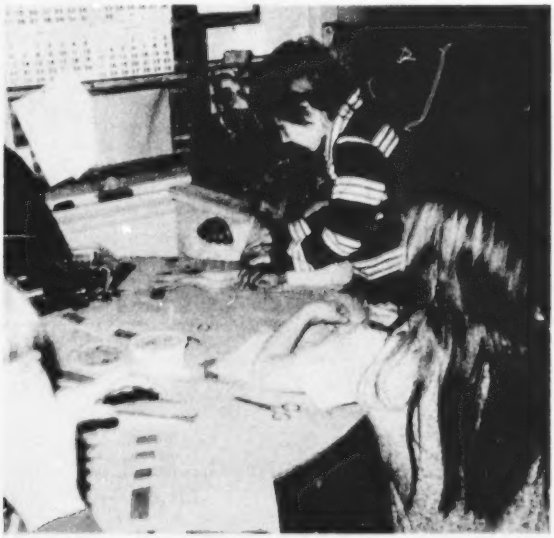
Mastery Learning: What Is It?

Teaching and learning are natural human phenomena. This is especially true in the parent-child relationship. Some of the principles of mastery learning are central to all teaching and to all learning. A concerned and loving parent teaching a small child to tie his shoe demonstrates many techniques of mastery learning. The parent has a clear notion of what constitutes successful shoe tying and breaks the tasks into small component parts and presents them in a logical sequence: lacing the shoe, crossing one lace over the other, making a loop, and so on. The parent approaches the task sensitively and systematically, providing guidance, feedback, and correction when and where needed; and the parent provides enough time and practice for the child to master the task.

Mastery learning techniques are used in the teaching and learning of psychomotor skills such as typing, driving a car, or flying an airplane, where each skill must be mastered sequentially. For example, an airplane pilot who has mastered all of the skills except one, landing, could not be judged as having achieved final mastery.

There is no one clear definition of mastery learning that encompasses all theories and practices, which are called mastery learning by their creators. However, mastery learning may be broadly defined as the attainment of adequate levels of performance on tests that measure specific learning tasks. Mastery learning also describes an instructional model whose underlying assumption is that nearly every student can learn everything in the school curriculum at a specified level of competence if the learner's previous knowledge and attitudes about the subject are accounted for, if the instruction is of good quality, and if adequate time on the task is allowed to permit mastery.

The mastery learning model requires concise, testable objectives that clearly describe the criterion for mastery and an accurate preassessment of the learner's knowledge of the task to be undertaken. Methods of instruction usually consist of some large group, some small group, and some one-to-one teaching, including peer tutoring. Various combinations of computer-assisted instruction, programmed instruction, games, worksheets, and other activities are components of every mastery learning model. This assessment is followed by prescription for further learning, which provides for progression to new learning tasks or remediation. Enrichment materials are prescribed for students who finish the tasks ahead of others. A postassessment that measures individual outcome, previously identified in the objectives, is the final stage of the mastery learning process. Figure 1, p. 11, graphically represents a basic instructional model.



Peer tutoring is an integral part of many mastery learning programs.

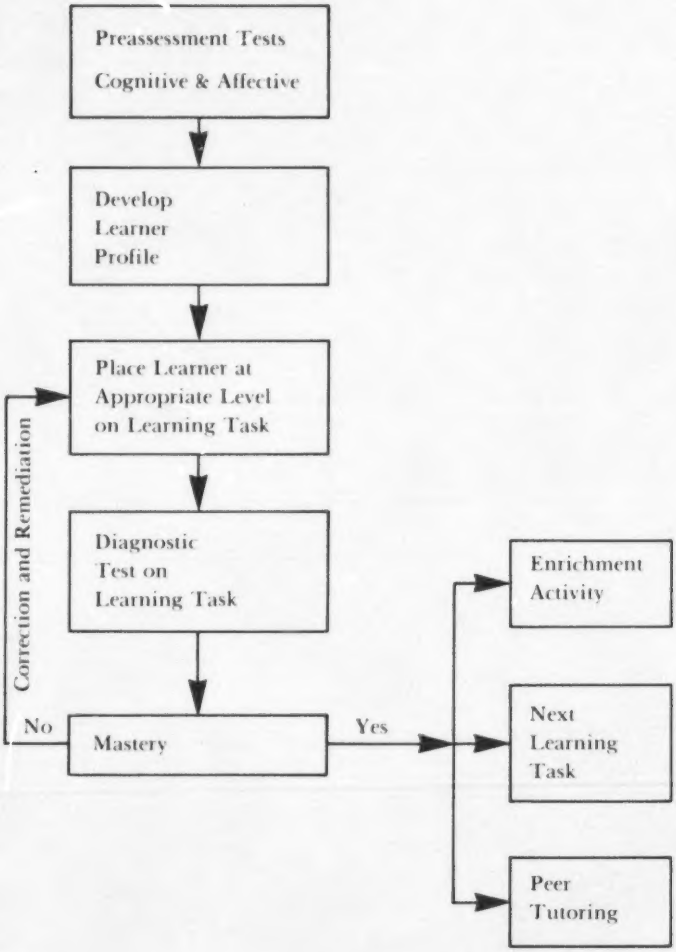


Figure 1
Sequence of Components in a Mastery Learning Model

Some Historical Background of Mastery Learning

Awareness of mastery learning, although not the use of the term, can be found in the writings of Comenius in the 17th century, Pestalozzi in the 18th century, and Herbart in the 19th century. In the early 20th century two pioneers in curriculum development, J. Franklin Bobbitt and W. W. Charters, described many of the concepts basic to mastery learning. In 1918 Bobbitt spelled out how to identify major curriculum objectives and how to plan appropriate learning activities. In 1923 Charters focused on the use of objectives in designing curriculum and described what he called "analysis of activities" as the basis for teaching the activities arranged into hierarchical sequences. Other early pioneers in mastery learning include Carleton Washburne who developed the Winnetka Plan in the 1920s, and Henry C. Morrison who designed a program for the University of Chicago Laboratory School in 1926. These forerunners shared many features of present models of mastery learning:

1. They described what, in terms of particular educational objectives, each learner was expected to accomplish.
2. They were composed of well defined learning units.
3. The learning materials were systematically arranged.
4. Mastery of lesser tasks was required before the learners were allowed to move on to more sophisticated tasks.
5. There was a discernible sequence in the materials so that learning was built on previous learning.
6. Ungraded, diagnostic progress tests were used as an integral part of the process.

7. Frequent and regular feedback was provided.

8. The instructional task was supplemented with corrective learning material throughout.

The ideas inherent in mastery learning went out of fashion during the 1930s but resurfaced in the 1950s and 1960s as corollaries of programmed instruction and computer-assisted instruction. Some principles of mastery learning found renewed acceptance through John Goodlad and Robert Anderson's work with the non-graded elementary school and through research by Robert Gagné and N. E. Paradise that suggested that learning tasks can be sequenced so that mastery of each task is a prerequisite for undertaking other more difficult work. Ralph Tyler's insistence that the curriculum be organized around clearly defined educational objectives provided further direction for teaching for mastery. Keller's "Personalized System of Instruction," strongly influenced by behavioristic psychology, also added impetus to a revival of interest in the principles of mastery learning.

Teacher-directed small group instruction is used for introductory as well as for remedial work.

The modern notion of mastery learning was born with a model developed by John B. Carroll in 1963. Carroll's theory, later transformed into an effective working model by Benjamin Bloom, states that if students are normally distributed with respect to aptitude, and all students are given the same instruction, then achievement will be normally distributed. Applying mastery learning theory, the same normal distribution will achieve *mastery* of the subject matter if provided with individualized instruction and appropriate learning time. Academic achievement, according to Carroll's theory, is simply the amount of time required by the learner to attain mastery of a learning task. Expressed as an equation:

$$\text{Degree of learning} = \frac{\text{Time Spent To Learn}}{\text{Time Needed To Learn}}$$

Historically mastery learning theory is highly compatible with American values and educational tradition. The notion that each child has a right to learn all the school has to teach and that the school has a responsibility to see that everything it has to teach is learned is basic to education in a democratic society.

Assumptions about Mastery Learning

There are several assumptions about mastery learning that suggest that, even though schools have not always done well for every student, the potential is there for improvement. There is a way for schools to assure that all students learn nearly everything the school has to teach. The following assumptions undergird nearly every mastery learning program:

1. *Nearly all children can learn equally or nearly equally most standard school tasks.*

Quality learning is possible for virtually all students if the school approaches its task sensitively and systematically, taking into account the present level of each student and providing appropriate help when and where needed. Very few school learning tasks require intellectual capabilities that are beyond those most human beings possess. What one can learn, most others can learn if the quality of instruction is adequate.

2. *Learning, not teaching, should be the primary interest of the school.*

Mastery learning assumes that the instruction, not the child, must be modified and adapted. This may require a more flexible approach to instruction and the way learners are viewed. Under a mastery learning program, schools that have traditionally used a selection and classification system based on ability will have to move toward helping all students develop intellectually. No child will be assigned to a group or track which is less academically respectable than any other student, since mastery of the total school curriculum is assumed to be a possi-

bility and a right for all students. Non-academic tracks and low-achieving groups will no longer be acceptable or necessary. Individual differences will be accommodated as all students achieve mastery under an instructional program where effective teachers approach their learning sensitively and systematically.

3. *The goal of schools is to assure equality of educational outcome as well as equality of educational opportunity.*

Few would deny the ideal of equality of educational opportunity. But the notion of equality of educational outcome is contrary to the accepted belief that some students will excel, others will succeed at an acceptable level, and still others will fail. Mastery learning assumes that if appropriate instruction has been provided, the difference in individual achievement reaches the vanishing point. All learners become more alike in learning outcome; that is, all achieve mastery of the content.

4. *Individual difference does not determine the amount of the school curriculum learned.*

Proponents of mastery learning do not deny the existence of intellectual differences. They simply believe that those differences need not set limits on how much of the school curriculum can be learned. Mastery learning advocates believe that differences in achievement result from poor environmental conditions more often than from low intelligence. Further, they believe that learning deficiencies can be remedied without excessive financial expenditure, which is a concern of many boards of education.

5. *It is essential that enough time on task be allowed to assure mastery.*

Time on task is an important aspect of mastery learning. To achieve mastery the learner must be given enough time to work on the task and enough practice to reinforce the learning. While some learners will require more time for mastery than others, the differences will not be great. With a relatively small increase in instructional time and effort (most researchers suggest 10% to 20%) nearly all students can achieve mastery. Some programs provide for additional time on task in after-school sessions through peer tutoring, taped instruction by the teacher, work sheets, and programmed instruction.

6. *Most school learning can be specified in terms of observable and measurable performance.*

Designing instructional objectives is the first component of a mastery learning model. The objectives are specific statements of expected student outcome. The final component of a mastery model is a test or a series of tests to measure outcome in terms of mastery of skills, concepts, and facts identified in the objectives. If a student fails to meet the objectives at any point in the learning sequence, the student is provided with remedial or corrective instruction to help achieve mastery. Therefore, identifying essential objectives and measuring how well those objectives have been reached is an integral part of the mastery learning process.

7. *Learning is sequential and logical.*

Almost every learning task has a base in some prior learning and will have consequences for future learning. In most schools today those students who are behind their classmates at the end of grade one are fur-

Teacher's taped instructions are a time-saving way to provide help on the way to mastery.

ther behind at grade three and still further behind at grade six unless the school provides remedial or correctional instruction and enough time for the students to catch up. Mastery models provide opportunities for logical and sequential learning experiences to facilitate this catching up.

8. *Student motivation is the key to increasing the quality and quantity of school learning.*

Bloom has demonstrated that the extent to which a learner possesses the prerequisites for the learning task accounts for 50% of the variance in relevant achievement on subsequent learning tasks. Another 25% of the variance is attributed to the learner's affective entry behaviors or the extent to which the student can be motivated to engage in further learning.

A student who has experienced failure in previous learning attempts is not likely to be motivated for further learning, has low self concept, and diminished faith in his or her ability to learn. Mastery learning, when it is handled properly, assures that the student experiences success at each level of the instructional process. Prior learning is assessed and the student is introduced to the task at a level commensurate with his or her cognitive entry skill. When problems arise, immediate and appropriate help is given as well as time to develop success on the task. Experiencing success at each level is motivation for further learning.

Components of an Effective Mastery Learning Model

While the general prerequisites for success with any educational method are knowledgeable and talented teachers, motivated and diligent students, and appropriate materials, mastery learning has six specific components which are both similar to and different from other methods. Each component is crucial to organizing and teaching for mastery and assuring that all students be given the maximum opportunity to achieve mastery regardless of the subject matter. The mastery model consists of six basic components.

Specific Objectives

Objectives are the first component of every mastery learning model. They are clearly stated, specific statements of outcomes and goals expected at the completion of each learning task. They must identify specific skills to be gained, key concepts to be understood, and significant facts to be learned, and they must be clearly presented at the onset of the learning process. The criterion for mastery is stated in the objectives. Designing concise, specific, and measurable objectives for each learning task is one of the most difficult undertakings in the entire mastery learning approach. All other components depend on the identification of clearly stated objectives.

Preassessment of the Learner

The preassessment test determines each student's present level of learning so that he or she may be correctly placed in the learning sequence with learning materials that are likely to be most effective.

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While tests of cognitive entry skills are available and easy to administer, this is not the case with affective entry behaviors. Valid tests for measuring motivation and attitude are not so readily available and are often more difficult to administer and interpret. However, both the cognitive and the affective levels should be measured whenever possible. Preassessment may also include analysis of the learner's previous work, interviews, performance demonstrations, and other information.

Instruction

The instructional component of the mastery learning model is at the heart of the process and of most immediate interest to teachers. In a well designed and managed mastery learning model the goal is to have each learner work at his own pace, in continuous progress toward mastery of the learning objectives. Many instructional strategies may be used. The important question is: Does this strategy help the student build on his present level of achievement and proceed toward mastery of the objectives? The teacher's professional judgment usually determines the strategy, but often the learner can offer suggestions about how he or she learns best. Worksheets, individual assignments, and audiovisual materials can all be used successfully in addition to large and small group instruction and peer tutoring. Taped instructions and short lectures help students progress at their own rate. Whatever method or combination of methods is used, it is extremely important for the teacher to provide regular, frequent, and specific reinforcement to the learner.

Diagnostic Assessment

Diagnostic assessment is used to see how well the instructional component is working. This assessment is conducted during instruction to determine if the learner is progressing as he is expected and to assure that no key skills, concepts, or facts are missed or only partly learned. It is used to pace learners and to adapt the instruction as needed.

Prescription

Diagnostic assessment provides information that allows the teacher

to prescribe future tasks. The prescription may include specific remediation strategies selected from a broad range of likely alternatives. For example, relocation may be prescribed for a student if the diagnostic assessment shows inappropriate placement in the learning sequence.

The prescription also may provide verification that the student is making adequate progress or that enrichment material or peer tutoring may be an appropriate strategy. Prescription begins early in the instructional process and continues until nearly all learners achieve mastery.

Postassessment

Postassessment is the final component of the model. It is at this level that the teacher determines to what extent the learning objectives have been achieved. Each student is measured to ascertain whether the crucial skills, concepts, and facts identified in the objectives have been mastered. Postassessment results can be used to refine the statement of objectives, to improve the instructional component, and to clarify the criterion for mastery.

But That's Just Good Teaching!

Many educators, upon taking a cursory look at mastery learning, see it as just good teaching. Good education in any form demands that the learner's prior knowledge of and feelings about the subject matter be considered; that the teacher have a clear and concise notion of what objectives are to be met and to what level of competency; that frequent reinforcement and monitoring be provided; that assessment determine if the instructional goals have been reached; and that remediation and correction be available for those students who need extra help. Mastery learning does include all of the principles of good teaching and learning, but it goes significantly beyond the usual definition of good instruction. Mastery learning differs from the traditional view of good teaching in several crucial ways.

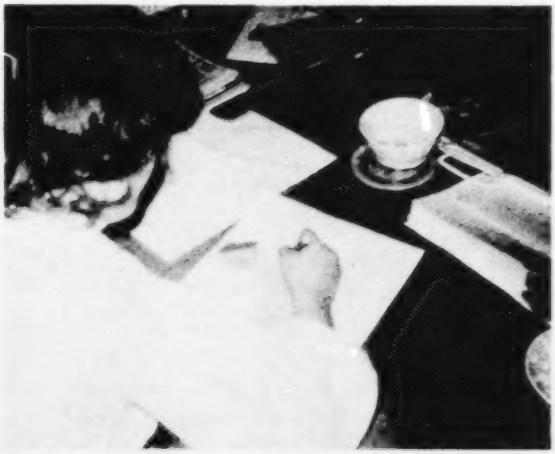
The most recognizable difference is in the level of specificity and precision required in the design of mastery learning programs. The emphasis of the instruction is on the attainment of clearly defined goals. The level of sophistication necessary to measure the degree to which the goals have been accomplished far exceeds that required in other instructional approaches.

Another important difference is that the planning for mastery learning must be accomplished much earlier in the instructional process than in conventional teaching. In most cases all planning and preparation of tests, worksheets, corrective material, and teaching strategies are completed well before instruction begins. Multi-year goals are a part of the program. Instead of planning from day to day or week to week, as is often the case with conventional teaching, mastery learning requires that the teacher prepare for at least one complete learning unit and usually for a full year's work or more.

Content is laid out in a logical and sequential way. Each student is tested to determine placement in the learning sequence. Help and encouragement are provided along the way. The characteristics of individual children are not viewed as limiting how much or to what level learning can progress. The emphasis is on adapting the instruction to make it possible for all learners to achieve mastery.

One of the most significant differences between mastery learning and traditional instruction is not in design or plan but in attitude toward human potential which is optimistic and generous. Mastery learning requires that the teacher believe and behave as if all children are capable of reaching mastery.

Another difference between mastery learning and other approaches is that mastery learning requires a greater amount of schoolwide support and administrative commitment. While it is possible for one teacher to plan some mastery learning units, it is more successful if the approach is used schoolwide or districtwide, where several teachers work and plan together and pool resources.



The use of individual worksheets at the appropriate level are an aid to mastery.

Implications for Classroom Practice

Implementation of mastery learning models will make a decided difference in the lives of teachers. They will be able to see nearly all students master content that was previously reserved for mastery by only the top students. The teaching profession will gain more respect from the community as schools are able to fulfill successfully their function of teaching all children. New and exciting interactions between teachers will result as information is exchanged and materials are shared. Teachers will undoubtedly work harder, for mastery learning is not an easy method to implement.

While it is possible to teach all subjects through the mastery learning approach, some subjects lend themselves more readily to the specificity and precision required. This does not mean that subjects other than the basics should not be taught by the mastery method. It does mean that teachers will have to work harder to use the mastery model with some content.

Implications for classroom use of mastery learning fit logically into three categories: planning for mastery, teaching for mastery, and management for mastery.

Planning for Mastery

Since preservice education for most teachers typically has not prepared them for mastery learning, they will have to study, read, attend workshops, and visit schools where mastery models are in operation. In addition to learning about the mastery model, teachers will need to examine their personal attitudes about the method. Mastery learning will require more work, especially in the initial stages, so a teacher who is not committed to the philosophy of mastery learning should

not attempt it. The teacher must believe that nearly all learners have the capacity to achieve mastery of all the school has to teach, providing the instruction is appropriate and enough time is allowed. Only then is the teacher ready to begin using mastery learning.

Once the teacher has an understanding of the process and a commitment to its goals, planning may begin. The first task is to examine carefully the content to be taught in order to refine objectives. The objectives need to be stated in concise, behavioral terms that can be accurately measured. The teacher must then identify the prerequisite skills needed by the learner to achieve mastery of the objectives, and a pretest must be developed that measures mastery of these identified skills. The component skills necessary to achieve the objectives must be identified and tests developed to measure mastery of these skills. The criterion for mastery should be established at this stage of planning.

Next, learning units of approximately two to ten hours must be planned and lesson plans developed for each separate element of the units. Diagnostic tests, corrective and remedial steps for each unit, and enrichment activities for each unit are an integral part of the planning.

Much of the work of mastery learning occurs before the actual instruction begins. Once the program is under way, and as teachers gain experience, and share material and ideas, the work load is reduced.

Teaching for Mastery

After detailed planning, the next phase is teaching for mastery. Since most students will be unfamiliar with the mastery learning concept, a thorough orientation is essential. Early orientation for parents may also be helpful. Since many students, especially in high schools and colleges, have come to believe that education is competition for good grades, teachers need to help them understand that the purpose of giving tests is diagnostic and not competition with their classmates An explanation of how grades will be determined is important during orientation, because most schools demand that teachers assign grades and most parents and students expect them.

After a thorough orientation, teaching the elements of the learning units begins. The following sound teaching principles direct the instructional process:

1. Allow students adequate time to practice each new skill.
2. Provide frequent, regular, and direct reinforcement.
3. Give students cues to help them select the appropriate responses.
4. See that all students participate actively in the learning tasks.
5. Furnish direct instruction in the learning task.
6. Monitor each student's work carefully and often.

The teacher will need to administer diagnostic tests at appropriate intervals to determine how each student is progressing. Students who do not master the work can be assigned remedial and corrective measures until the content is mastered. Students who master the tasks can be assigned enrichment materials or work at peer tutoring.

Managing for Mastery

Managing the mastery learning process is an ongoing operation. Since the mastery approach to learning is different from traditional teaching in so many ways, and since teachers will have a lot of planning and preparation, especially during the early stages, a small start is best. Mastery learning can be initiated by starting with one subject at a time, then moving on to other areas as the teacher and students feel ready. Since the basic skills areas lend themselves more readily to the mastery approach, it is wise to start in one of these areas before moving to other content.

As mastery learning proceeds, the teacher is responsible for accurate record keeping on the level and progress of each learner. The progress must be reported to the learners and their parents at regular and frequent intervals. The teacher must keep the learners motivated and on track toward achievement of the goals.

One of the most important management tasks is to provide a classroom environment that is conducive to mastery learning. The environment should emphasize a respect for the academic work being done and a need for continued improvement. The environment which is most likely to facilitate learning is one that is supportive and nurturing, but also one that is businesslike and task oriented.

Concerns and Cautions

The evidence from mastery learning indicates that most students can learn everything the schools have to teach and that they can learn it at a mastery level with relatively little additional expenditure of instructional effort. Mastery learning seems to fit well with current concerns about education. What then is the source of discomfort with it? Why hasn't it been more widely used? Are there problems with this approach about which we need to be aware?

Need for Highly Specified Instructional Goals

For mastery learning to succeed requires specifically stated instructional goals. While most educators can agree on broad educational goals (basic literacy, for example), it is more difficult to agree on specific goals. Further, many teachers have not had the training or experience to tailor their instruction to specific goals required by mastery learning.

Philosophical Disagreement over the Concept of Equality

The proponents of mastery learning interpret equality as meaning that students attain mastery of the same competencies. Opponents argue that equality is the *opportunity* to develop in different directions according to one's abilities and interests, but not necessarily to achieve the same results. Opponents are concerned that mastery learning with its emphasis on achieving specific instructional goals may be done at the expense of other curriculum areas; for example, achieving

competency in math or reading by reallocating time that could be used on art or music. Until this philosophical difference is resolved, mastery learning is not likely to receive wide support from the entire educational community.

Scarcity of Sophisticated Diagnostic and Assessment Tools

For mastery learning to succeed, more and better instruments for diagnosing student academic problems and assessing gains must be readily available to teachers. This is simply not the case at present. Those sophisticated evaluative tools that are available tend to be used by psychologists and researchers who are trained in their use and interpretation. Classroom teachers need diagnostic tools that can be used without the help of specialized personnel.

Lack of Corrective Instruction

A vital component of mastery learning is effective corrective instruction at each step of the way, so that all students are kept on the path to mastery. If this component is lacking, the entire process fails. At present we have neither the resources nor well-defined instructional modes to assure that mastery learning will work. However, we are more sophisticated in providing the kind of corrective help needed in basic skill areas than we are in such areas as teaching students to think creatively or to engage in decision making.

Concern for Teacher Time and Energy

Research suggests, and proponents state, that a 95% mastery rate can be achieved with as little as a 10% to 20% increase in instructional effort. Research also suggests that even though some students require more time for mastery than others, the time difference need not be great. However, many teachers perceive themselves to be working at full capacity now and to increase instructional time and effort only 10% to 20% seems overwhelming, particularly with the initial effort needed to write specific goals, design appropriate evaluative tools, and plan instructional strategies. Unless a teacher is dedicated to the concept of mastery learning, the enormity of the task is likely to hinder its widespread adoption.

Increased Emphasis on Early Childhood Education

Benjamin Bloom maintains that cognitive entry skills account for up to one half of the variance on achievement measures of subsequent learning tasks and that affective entry behaviors account for another one fourth. If this is the case, the implication is clear: More attention must be paid to learning at the preschool and primary levels. In terms of educational policy this may mean spending more in the early years and less in the later years. Whether educators and the public are willing to act on what we know about the importance of learning in the early years is an open question.

Difficulty of Defining Curriculum for Mastery

Does mastery learning suggest a closed curriculum? Is a learning ceiling established? After a student has achieved mastery, then what? What, if anything, is beyond mastery? Does the teacher provide additional content for mastery? If so, are 95% of the students expected to master this enrichment material too? What will the curriculum be? Will there be an upper or closed limit to what one can be expected to learn at any level? The sticky problem of definition of curriculum is an inherent concern in working with mastery learning, because before we can intelligently talk about mastering a curriculum, we must come to grips with what is to be mastered. Until some of these questions are resolved, mastery learning is likely to stay outside the mainstream of American classrooms.

Problems with Time and Content Variables

In nearly all schools time is a fixed variable (45-minute class periods, five-and-a-half-hour school days, 180-day school years), while the amount of content mastered is a flexible variable (the amount of content mastered depends, to a large extent, upon what each student is able to learn within a fixed time span). Mastery learning requires flexible time allotments in order to assure a fixed mastery of content—that is, most of the students are expected to achieve mastery, although at varying rates. While this idea is uncommonly appealing in terms of what we know about human learning, we have yet to invent any practical means for implementing it in the real world of day-to-day school

planning. Until we are able to overcome the barrier of fixed time-content variables, we cannot use mastery learning to the extent its proponents advocate.

The Stigma of a Behavioristic-Based Teaching Model

Educators are generally humanistically oriented people who might look askance at any model that is grounded in a behavioristic base for teaching and learning. Many teachers reject the notion that learning can be broken down legitimately into small bits and pieces and then presented to the learner in a sequential and systematic fashion. While mastery learning need not be completely rooted in behavioristic, stimulus-response psychology, the associations with it are well-founded enough to raise concern and apprehension in many teachers. For mastery learning to succeed, teachers will have to be convinced that it can also contribute to divergent and creative learning styles. If mastery learning is perceived to be at variance with most teachers' experiences of what constitutes a good learning environment, it cannot succeed despite sound theory and ample research.

Limited Teacher Skills for Using Mastery Learning

Mastery learning assumes skills that teachers do not necessarily possess. The available models for mastery learning provide only broad, general guidelines and leave the filling in of day-to-day and minute-to-minute strategy up to the teachers. Most teachers would undoubtedly agree with proponents of mastery learning that instruction should be approached sensitively and systematically, that it should take into account the entry skills of the learner, that students should be given help when they are having difficulty, that student participation in learning is necessary, and that frequent and appropriate feedback and reinforcement are essential since these are sound principles of teaching and learning under any instructional design. But what is to be done with these principles as they relate particularly to mastery learning? Teachers will need more preservice and inservice training before mastery learning can be widely used in classrooms.

Conclusion

Mastery learning is an optimistic theory of human learning that assumes that all learners can achieve mastery of the content the schools have to teach. While research evidence and the testimony of its proponents indicate that mastery learning can work under some conditions, it is not a method to be undertaken without a lot of thought and preparation. We do not know whether mastery learning works with all subjects in all classrooms. We do know that if it is going to work, it requires a dedicated teacher and a committed administrator who believe in the concept and who are willing to work at perfecting classroom instruction. We know, also, that long-range planning is essential.

Mastery learning is not as simple as it is made to seem by some of its advocates, but it does offer some exciting ideas about organization of instruction that could result in some positive consequences. The goal of nearly universal mastery of content raises some serious curriculur and philosophical questions about the nature of teaching and learning. The mastery learning concept should cause us to examine critically our present notions about how teaching and learning can best be accomplished, what is the most important content the schools have to teach, and whether everyone should learn the same material to the same level of competence.

While it is certain that mastery learning is not the answer for all and may not be an answer for most, it does provide exciting and provocative assertions which all educators might well explore. Mastery learning has the potential for making a tremendous difference in the teaching and learning that occurs in our schools and therefore it has the potential for making a difference in the society those schools serve. As an innovative method and as a powerful concept, mastery learning deserves our careful consideration.

Annotated Bibliography

Block, James H. *Mastery Learning: Theory and Practice.* New York: Holt, Rinehart and Winston, 1971.

An introduction to the theory and practice of mastery learning with selected papers by James H. Block, Benjamin Bloom, John B. Carroll, and Peter W. Airasian. Includes an extensive annotated bibliography of mastery learning research.

Block, James H. and Anderson, L. W. *Mastery Learning in Classroom Instruction.* New York: Macmillan, 1975.

Provides background in theory and research in mastery learning and relates it to classroom instruction. Describes components of mastery learning necessary for implementation in instructional programs.

Bloom, Benjamin S. "Learning for Mastery." *Evaluation Comment* 1, No. 2 (May 1968).

Provides basic framework for mastery learning. In order for schools to fulfill their role in society they must promote adequate learning and assurance of progress.

Bloom, Benjamin S. *Human Characteristics and School Learning.* New York: McGraw-Hill, 1976.

Bloom extends and amplifies the theory and research on mastery learning and develops a theory of school learning. He concludes that what one person can learn, almost all persons can learn if provided with appropriate prior and current conditions for learning.

Carroll, John B. "A Model of School Learning." *Teachers College Record* 65 (1963): 723-33.

This seminal article on mastery learning has provided the foundation for most of the recent models and theories. The model is centered on the analysis of learning tasks. Time is seen as the crucial variable in completing the tasks to a mastery level.

Educational Leadership 37 (1979).

The theme of the entire issue is mastery learning. The articles lean heavily toward testimonials for programs in operation, but there is some

treatment of theory and updating of research. Two articles raise questions about the use of mastery learning techniques. Of particular interest is an interview with Benjamin Bloom.

Frazier, Alexander. *Adventuring, Mastering, Associating: New Strategies for Teaching Children.* Washington, D.C.: Association for Supervision and Curriculum Development, 1976.

Frazier presents a three-strand model for curriculum that shows how mastering allows children to reach their full powers as they become increasingly competent in making sense of their world. Proposes a proficiency model based on an understanding of and respect for children's natural powers.

Harvey, Karen and Horton, Lowell. "Bloom's Human Characteristics and School Learning." *Phi Delta Kappan* 59 (1977): 189-93.

Examines Benjamin Bloom's work and discusses what schools would be like if his ideas were incorporated into classrooms. Flexibility of time, space, grouping, materials, and staffing patterns would be necessary.

Torshem, Kay Pomerance. *The Mastery Approach To Competency-Based Education.* New York: Academic Press, 1977.

Technical but readable text dealing with instructional design. Part two is especially useful in the treatment of mastery learning as a means of achieving competency-based education. Research, models, and theory of mastery learning are examined.

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